MAY 2007

A RENEWABLE FUEL THAT REDUCES AIR POLLUTION

WHAT YOU SHOULD KNOW ABOUT BIODIESEL IN NEW ENGLAND

BACKGROUND

Biodiesel is a domestically produced, renewable fuel that can be manufactured from vegetable oils (primarily soy beans) or recycled oils such as cooking oil. Biodiesel is safe, biodegradable, and reduces air pollutants such as particulate matter, carbon monoxide, hydrocarbons, and air toxics. Ongoing research is exploring whether biodiesel increases emissions of nitrogen oxides (NOx). Biodiesel used in cars and trucks must meet the requirements of the American Society of Testing and Materials (ASTM) D6751 testing protocol.

BLENDING BIODIESEL WITH REGULAR DIESEL

Blends of 20% biodiesel with 80% petroleum diesel – known as B20 – can be used in unmodified diesel engines or stationary boilers. Biodiesel can be used in its pure form (B100), but may require engine modifications to avoid maintenance and performance problems. Pure biodiesel can gel in cold weather, which can make B100 unsuitable for use in cold climates. Because biodiesel is a cleaner fuel, it is important to change the fuel filter a few times during the initial period of biodiesel use.

HEALTH AND ENVIRONMENTAL EFFECTS

Biodiesel is a renewable fuel. According to the US Department of Energy, biodiesel production and use, in comparison to petroleum diesel, produces 78% less carbon dioxide emissions. Although carbon dioxide is released when biodiesel made from soybeans is combusted, the annual production of soybean crops helps remove carbon dioxide from the atmosphere.

B20 reduces emissions of particulate matter and carbon monoxide by about 10%, as well as lowers emissions of hydrocarbons (including some toxic air pollutants) by more than 20%. B100 reduces emissions of particulate matter and carbon monoxide by 47%, while lowering emissions of hydrocarbons by 67%.

A 2002 EPA analysis suggested vehicles using biodiesel may emit slightly more NOx - about 2% for B20 and 10% for B100 - than regular diesel. Subsequent studies have yielded mixed results, with some showing small increases and others showing small decreases. EPA plans further investigation to fully assess this issue, including the emissions impact of using biodiesel in vehicles equipped with PM traps and NOx aftertreatment technologies that are designed to meet strict emissions standards.

ESTIMATED COST OF BIODIESEL BLENDS

While costs vary by location, a B20 blend generally costs about 20¢ per gallon more than regular diesel fuel, and B100 generally costs about $1 more per gallon. Biodiesel is being used in parts of every state in New England.

Tax incentives may help offset the cost differential between biodiesel and regular diesel. Under federal law, there are several tax credits available to biodiesel blenders and producers. For blenders, one type of credit amounts to one penny per percentage point of biodiesel made from first-use oils (such as soybean oil) and a half-penny per percentage of biodiesel made from other sources (such

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BIODIESEL

1. Biodiesel is a renewable fuel that is usually refined from soybean oil
2. Biodiesel can help reduce many air pollutants emitted by diesel engines
3. Biodiesel production and use, in comparison to petroleum diesel, produces 78% less carbon dioxide emissions

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as recycled cooking oil). In other words, an excise tax credit of $1 per gallon is offered to certified biodiesel blenders of refined B100 biodiesel. Blenders can pass these cost savings to consumers through competitive pricing practices.

Two tax credits created through the Energy Policy Act of 2005 provide different incentives for using biodiesel: the Alternative Fuel Refueling Infrastructure Tax Credit (AFRITC) and the Small Agri-Biodiesel Producer Tax Credit (SABPTC). The AFRITC program offers a credit for up to 30% of the installation cost for fueling stations that offer a range of alternative fuels, including biodiesel blended to B20 or higher. The SABPTC program gives a 10¢-per-gallon credit, up to 15 milion gallons, to producers of agri-biodiesel whose production capacity is less than 60 million gallons.

FEDERAL AND STATE REQUIREMENTS AND BIODIESEL

The Energy Policy Act of 1992 (EPAct) required federal fleets to acquire a certain percentage (up to 75% by 2005) of alternative fuel vehicles (AFVs). The updated Energy Policy Act of 2005 (EPAct 2005) broadened the compliance options by allowing fleets to choose a petroleum reduction path and waive the requirement for acquiring AFVs. To receive a waiver, fleets must prove to the Department of Energy that they will achieve petroleum reductions equivalent to their AFVs running on alternative fuels 100% of the time. EPAct 2005 also requires federal fleets to use alternative fuels in all dual-fuel vehicles.

PURCHASING BIODIESEL

The infrastructure to bring biodiesel to consumers is emerging at a rapid pace. Currently, there are several suppliers of biodiesel, approximately 35 blenders and distributors of biodiesel, and more than 50 biodiesel retail fueling sites in New England. Suppliers work with a network of distributors to provide biodiesel to a variety of locations across the country and throughout New England. Biodiesel is available for retail sale at a growing number of refueling stations in New England. The National Biodiesel Board tracks suppliers, distributors, and retail providers of biodiesel. For the most current list visit: **www.biodiesel.org**

USING BIODIESEL IN NEW ENGLAND

A number of organizations in New England are using biodiesel. While not a comprehensive list, the following is a sampling of where biodiesel is being used in the region. All six New England states offer retail fueling stations for biodiesel blends.

CONNECTICUT - The state DOT has been using B20 for five years. Using biodiesel could help generators earn renewable energy credits under the state's requirements for green power.

MAINE - Biodiesel is used in home heating applications, organic and traditional farming applications, and by individual motorists. LL Bean, Maine DOT and Oakhurst Dairy are using biodiesel. In addition, the City of Bangor is using biodiesel in a number of city vehicles.

MASSACHUSETTS - Biodiesel is used in home heating applications and by individual motorists throughout the state. Otis Air Force Base, Harvard University, the University of Massachusetts at Amherst, NSTAR, the Cities of Medford and Cambridge, and the Town of Brookline are using biodiesel. Harvard uses biodiesel in all its diesel vechicles. Like Connecticut, using biodiesel could help generators earn renewable energy credits under the Massachusetts requirements for green power.

NEW HAMPSHIRE - The Mount Cranmore ski resort, the New Hampshire DOT, Keene State, and Pease Air Force Base are using B20. Multiple companies have biodiesel filling stations throughout the state.

RHODE ISLAND - Biodiesel has been used in water taxis, tour boats, and school boilers.

VERMONT - The University of Vermont runs its buses on B20. Biodiesel is used in diesel vehicles as well as in home and institutional heating applications in parts of the state.

For More Information

US Environmental Protection Agency
New England Office
www.epa.gov/ne/eco/diesel

SmartWay Grow and Go Program
http://www.epa.gov/smartway/growandgo/

US Department of Energy
Office of Energy Efficiency and Renewable Energy (Clean Cities Program)
www.eere.energy.gov/cleancities/

www.eere.energy.gov/afdc/altfuel/biodiesel.html

US National Biodesel Board
www.biodiesel.org

Canadian Renewable Fuels Association
www.greenfuels.org/biodieselsuppliers.html

EPA United States Environmental Protection Agency New England

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For more information call the EPA Air Quality Hotline at 1-800-821-1237